

What is claim d is:

1. A manipulator having a plural number of joints therein, wherein at least in one (1) joint of said joints, comprising:

two (2) pieces of rotating members, being disposed opposing  
5 to each other;

a driving means for driving one of said rotating members to make a rotating movement to the other thereof; and

a means for keeping a distance between rotation centers of said two (2) pieces of rotating members to be constant.

10 2. A manipulator, as described in the claim 1, wherein said driving means has a guide means attached on a rotation shaft of each of said rotating members, and a wire fixed at least of one (1) point thereof onto said guide means.

15 3. A manipulator, as described in the claim 2, wherein said joint is a second one from a tip thereof or thereafter, and a wire for driving the joint locating nearer to said tip portion is guided to the joint on a side of the tip portion, passing through between said guide members owned by said joint.

20 4. A manipulator, as described in the claim 1, wherein said rotating members is made up with at least one of the followings; a gear, on a rotating portion of which are formed a plural number of teeth; a means having a semicircular portion, on which a hardening surface treatment is conducted; means being treated with surface processing having viscosity or adhesiveness on surfaces in contact  
25 with each other; a means having wire holding means disposed opposing to each other and two (2) pieces of wires, each being fixed on said different wire holding means at both end portions thereof, while crossing said two (2) pieces of wires with each other.

5. A manipulator, comprising:

a surgical tool portion;

a grip portion provided on said surgical tool portion; and

a driver portion for driving said gripping portion provided on said surgical tool portion, wherein

5 a surgical tool connection portion is provided between said surgical tool portion and said driver portion, and said surgical tool portion can be separated from or connected to, between said driver portion and said surgical tool connection portion.

10 6. A manipulator, as described in the claim 5, wherein said surgical tool connection portion has a plural number of first guiding means for guiding wires for driving a grip portion, wires being guided by means of said first guiding means, and a second guiding means being formed with a pulley for holding a portion of said wires, wherein said driving portion has a third guiding means being in contact with said second guiding means, and a driving  
15 means for driving said third guiding means.

7. A manipulator, as described in the claim 6, wherein a tension detecting means is provided in a middle of said wire.

20 8. A manipulator, as described in the claim 6, further comprising means for controlling an amount of pulling said wire by means of said driving means.

9. A manipulator, as described in the claim 5, wherein said surgical tool connection portion has a pin extending to an end portion side thereof, while forming a hole in said driver portion  
25 for inserting said pin therein, whereby positioning said driver portion and said surgical tool connection portion.

10. A manipulator, as described in the claim 5, further providing a screw means for connecting said surgical tool connection portion and said driver portion, forming a hole in a  
30 central portion of said surgical tool connection portion, and also hole at a position corresponding to said hole in said driver portion,

respectively.

11. A manipulator, comprising:

a surgical tool portion;

a grip portion provided on said surgical tool portion; and

5 a driver portion for driving said gripping portion provided on said surgical tool portion, wherein

a surgical tool connection portion is provided between said surgical tool portion and said driver portion, and said surgical tool portion can be separated from or connected to, between said  
10 driver portion and said surgical tool connection portion, and said surgical tool connection portion has a joint for rotating said grip portion, wherein said joint has: two (2) pieces of rotating members, being disposed opposing to each other; a driving means for driving one of said rotating members to make a rotating movement  
15 to the other thereof; and a means for keeping a distance between rotation centers of said two (2) pieces of rotating members to be constant.

12. A manipulator, comprising:

a joint having a first link and a second link therein;

20 a rotating contact means for bringing said first and second links to rotate while being in contact with each other;

a guide means for guiding a wire at an equal distance from each rotation center of said links when they rotate while being in contact with each other; and

25 said wire being guided by said guide means, wherein said wire is wired passing through between said guide means.